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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,639	09/22/2003	Torleif Torgersen	60.1536 US NP	1108

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SCHLUMBERGER-DOLL RESEARCH
ATTN: INTELLECTUAL PROPERTY LAW DEPARTMENT
P.O. BOX 425045
CAMBRIDGE, MA 02142

EXAMINER

GAKH, YELENA G

ART UNIT	PAPER NUMBER
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1797

MAIL DATE	DELIVERY MODE
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12/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	10/667,639		TORGERSEN ET AL.	
	Examiner		Art Unit	
	Yelena G. Gakh, Ph.D.		1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 8, 10-14, 18, 21-23 and 25-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9, 15-17, 19- 20 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Amendment filed on 10/25/07 is acknowledged. Claims 1-33 are pending in the application. Claims 8, 10-14, 18, 21-23 and 25-33 are withdrawn from consideration. Claims 1-7, 9, 15-17, 19-20 and 24 are considered on merits.

Response to Amendment

2. In response to the amendment the examiner withdraws the objection to claim 2. Rejection of claims under 35 U.S.C. 112, first paragraph and second paragraphs, are modified. Rejection over the prior art is sustained.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1 and 24 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the method comprising the step of mixing the analytical reagent with the formation fluid before the reacted mixture is moved through the spectral analyzer cell, does not reasonably provide enablement for the method, which lacks such step. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims. There is no way for a routineer in the art to move a reacted mixture of formation fluid and analytical reagent fluid if the analytical reagent is held in the reagent container and is not mixed with the formation fluid to form a reacted mixture before the mixture is moved to the fluid analyzer.

Claim 7 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the method based on the known pump rate of injection, does not reasonably provide enablement for the method, for which the pump rate of injection is not known. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

There is no way for a person of ordinary skill in the art to adjust the predetermined volume by adjusting an injection period of time, if the pump rate is not known.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

From claim 4 it is not clear, how the recited step of "establishing and storing baseline optical density values for at least one wavelength" is related to the method recited in the preceding claims. First, the spectral analyzer is not defined as an optical spectral analyzer in the parent claims. Spectral analyzer can be NMR or MS analyzer, which are not optical analyzers, and therefore, claim 4 would not further limit the subject matter of the parent claim, since it would not recite the subject matter relevant to the parent claim. If the Applicants intend to specify spectral analysis as optical spectral analysis in one of the embodiments, they need to clearly recite for claim 4, "wherein the spectral analysis is optical spectral analysis"; moreover, they should specify, which particular baseline optical density values for at least one wavelength should be stored, and where they should be stored. From the present claim it is totally unclear, as to which baseline optical density values are meant in the claim. Are the values related to the reagent? To the formation fluid? To the background? It is also unclear, as to where the values are supposed to be stored. The preceding claims do not recite any automated analysis or any CPU, in which the values could be stored.

In claims 6 and 17 it is not clear, what does it mean, "adjusting the predetermined volume"? If the volume is predetermined, then it is not apparent, as to why and to which value the volume should it be adjusted. The recitation renders claims 6, 7 and 17 unclear.

Claims 15 and 19 are unclear. It is not apparent, as to how "injecting reagent" can include "extracting formation fluid from a stopped flow-line", and how extraction time of the formation fluid is relevant to the injection volume of the reagent. It appears that "injecting reagent" and "extracting formation fluid" are two totally different processes, and therefore it is not clear, how one can comprise another. Clarification is required.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. **Claims 1-2, 4 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Grey et al. (US 5,246,862) in view of Clark et al. (US 6,564,866).

Grey discloses “method and apparatus for in-situ detection and determination of soil contaminants” (Title): “A reagent carrying tape is captured between the soil and the outer wall of penetrometer. As the penetrometer moves with respect to the soil, the tape is pressed against an optical window in the penetrometer. Contaminants in the soil reacting with the reagents cause an optically sensible reaction in the tape to occur which is optically detected at the optical port as the penetrometer moves with respect to the tape and the soil sample. The optically sensible reaction occurring in the tape is optically isolated from the masking effects of the soil. A method is also disclosed” (Abstract).

Grey’s method is directed toward detection of contaminations in soil using the reagent-impregnated tape and therefore does not disclose mixing of the reagent with the formation fluid and moving the mixture through the flow cell of the analyzer, although utilizing analytical reagents in both, dry and liquid, forms is well known in the art.

Clark discloses a method and apparatus for detecting the presence of a fluorescence tracer dye (the analytical tag) in the formation fluid by mixing the fluorescence tracer into the formation fluid and moving the mixture through the flow cell of the spectral analyzer: “a downhole tracer detection sensor module is provided for a quicker response time as the tracer detection sensor is installed closer to the source, i.e., tracers module and provides almost instantaneous and direct analysis” (col. 3, lines 14-18); “a fiber optic fluorometer/spectrometer instrument is also provided to determine the concentration and distribution of dye tracers within the harsh conditions of the hydrocarbon process flow stream” (col. 3, lines 29-32).

It would have been obvious for any person of ordinary skill in the art to modify Grey’s method for determining components of formation fluids, rather than the soil, by mixing the reagent with the formation fluids and analyzing the mixture in the flow cell of spectrometer/

photometer in the way, as disclosed by Clark for mixing the formation fluid with the tracer, because this allows expanding Grey's method for important analysis of formation fluids. It would have been obvious for any person of ordinary skill in the art to have reagents stored in the reagent containers rather than impregnated in the tape, because it allows better regulation of the amount of reagents mixed with the formation fluid and because utilizing analytical reagents in both, dry and liquid forms, is well known in the art.

9. **Claims 3 and 5-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Grey in view of Clark, as applied to claims 1-3 and 24, and further in view of Tawarayama et al. (US 5,783,740).

Grey in view of Clark do not specifically disclose flow injection analysis of the mixture of the reagent and the formation fluid using the syringe pump with a predetermined volume of the reagent. Tawarayama teaches a method for detecting trace elements in water flow using flow injection of coloring agents into the flow loop with a syringe and flowing the mixture of through the flow cell of the spectrophotometer. "The syringe pump, which is different from a plunger pump or peristaltic pump for continuously feeding a solution, is able to inject a specified amount of a carrier solution or a coloring reagent into a flow passage. Accordingly, when the sample is introduced into the second loop, the valve is switched in direction to the second flow passage side, so that the sample and the coloring reagent sampled by the syringe pumps are injected into the second flow passage and mixed to each other, thus to perform the coloring operation. Since the syringe pump can be operated as required by controlling operation of the syringe pump, switching of the valve, and the like in term of time, the consumption of the coloring reagent is minimized, and also the control thereof is made easy. The detection unit in (4) has a flow cell into which a substance (reacted substance) colored in the second flow passage is injected using the syringe pump, followed by measurement of absorbance at a specified wavelength" (col. 3, lines 53-67 and col. 4, lines 1-7).

It would have been obvious for a person of ordinary skill in the art to improve Grey-Clark's method by providing flow injection system using syringe pump as disclosed by Tawarayama, because it allows a controllable injection of reagents into the formation fluid and minimizing the consumption of the reagent.

10. **Claims 9, 15-17 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Grey in view of Clark and Tawarayama, as applied to claims 3 and 5-7 above, and further in view of Tubel et al. (US 5,597,042).

Grey in view of Clark and Tawarayama do not specifically disclose injecting reagent into the stopped formation fluid.

Tubel teaches a “method for controlling production wells having permanent downhole formation evaluation sensors” (Title), including chemical sensors (see col. 18, lines 19-20). Tubel indicates, “the processor 50 simply evaluates parameters existing in real time in the borehole as sensed by flow sensors 56 and/or formation evaluations sensors 58 and then automatically executes instructions for appropriate control. Note that while such automatic initiation is an important feature of this invention, in certain situations, an operator from the surface may also send control instructions downwardly from the surface to the transceiver system 52 and into the processor 50 for executing control of downhole tools and other electronic equipment. As a result of this control, the control system 50 *may initiate or stop the fluid/gas flow from the geological formation into the borehole or from the borehole to the surface*” (col. 14, lines 52-64).

It would have been obvious for any person of ordinary skill in the art to use the control system in order to stop the flow of the formation fluid, as taught by Tubel, in Grey-Clark-Tawarayama’s method, because injecting the certain amount of the reagent into the stopped formation fluid allows to more precisely estimate its concentration in the mixture, which affects results of the analysis.

Response to Arguments

11. Applicant's arguments filed 10/25/07 have been fully considered but they are not persuasive. The examiner withdrew objection to claim 2 and modified rejections of the claims under 112, first and second paragraphs, in view of the amendment. The examiner believes that while a part of the rejections is overcome with the amendment, the issues of the scope of enablement and non-clarity and indefiniteness of several pending claims still remain.

Regarding rejection over the prior art, it appears that the Applicants refer to each of the applied references individually, rather than in combination. The examiner would like to remind the Applicants that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Grey employs dry reagent on the tape. Clearly, none of the limitations in the claims that are applicable only to liquid reagents are disclosed by Grey. However, applying analytical reagents in both, dry and liquid forms is well known in the art. Moreover, Clark teaches mixing the fluorescent tracer with the formation fluid in order to detect the tracer in the formation fluid downhole and thus provides all necessary steps lacking from Grey for mixing the analytical reagent with the formation fluid with the following detection of the reacted mixture by a downhole detector. Clark was not applied by the examiner as teaching all necessary limitations of the claims. The examiner admits that fluorescent tracer was improperly referred to as "an analytical reagent" in the previous Office action (in brackets); however, the examiner did not rely on Clark for any features specifically characteristic of analytical reagents; rather, Clark was relied on as teaching the steps of mixing the tracer with the formation fluid followed by its detection in the downhole detector. Clark specifically discloses the downhole detector.

All remaining references of the prior art applied as secondary references by the examiner are also treated by the Applicants individually, which is an improper response to the rejection established by the examiner that implies the references in combination, with all proper motivations clearly indicated by the examiner.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Application/Control Number:
10/667,639
Art Unit: 1797

Page 8

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yelena G. Gakh, Ph.D. whose telephone number is (571) 272-1257. The examiner can normally be reached on 9:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yelena G. Gakh/
Primary Examiner AU 1797

12/9/2007